III REMARKS

In the Examiner's Action, the Examiner noted that claims 27–50 stand withdrawn from further consideration pursuant to 37 C.F.R. Section 1.142(b) as being drawn to a non-elected inventions and species. In the Amendment, Applicant has cancelled claims 27–50.

Applicant's Response To Rejection Under 35 U.S.C. Section 112

The Examiner has rejected claims 1–26, 51 and 52 under 35 U.S.C. Section 112, first paragraph, as failing to comply with the enablement requirement. In support of this rejection, the Examiner has made the following arguments:

> The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The[s]e claims are beyond the scope of the specification, which provides only limited compositions of specific ratios of 5 compounds in water or Rapeseed oil, applied unspecified as to pre or post harvest, effective in 2 tests of undeterminable microbial nature. The multitude of claimed inventions, without specific guidance as to combination of critical components[,] ratios and amounts applied at specific growth stages of specific plants to protect against specific microbes requires more testing than one of ordinary skill in the art would be expected to perform in order to determine whether or not any claimed composition in fact protects plants when applied post harvest. Note that no composition actually prevented microbial growth.

(Page 2, line 17 to Page 3, line 4).

Applicant's amended claims are directed to compositions consisting essentially of certain specific ingredients, including at least one of the five compounds in water or rapeseed oil identified by the Examiner and set forth in the EXAMPLES. The five compounds are tannin, benzyl alcohol, propylene glycol, lactic acid and a phenol-containing essential oil. (*See* specification at page 26, lines 5–9). Applicant

respectfully disagrees with the Examiner's argument that the specification does not disclose to one skilled in the art that compositions comprising one or more of the five compounds protect plants when applied post-harvest. The TABLES at pages 27, 28 and 29 of the specification discloses that wheat, tobacco and coffee treated with the composition in a 50% solution in water, or in rapeseed oil, had no growth in parasite larvae, unlike the untreated wheat, tobacco and coffee, which was populated with parasite larvae six months after harvest. Accordingly, Applicant's claims, which are directed to antimicrobial compositions that protect harvested wheat and tobacco from parasite larvae, are enabled by compositions disclosed in the referenced EXAMPLES. At least one of the ingredients in the compositions used in the EXAMPLES that protected harvested wheat and tobacco from parasite larvae is present in the claimed antimicrobial compositions.

Applicant notes in passing that claims 12–15 and 17 are to compositions that contain both tannic acid and tannin. Applicant defines tannin as not completely interchangeable with tannic acid. *See* ***The Merck Index***, Ninth Edition (Merck & Co., Rahway, NJ, 1976), pp. 1172–73, attached as **EXHIBIT A**.

Accordingly, in view of the amendments to the claims and the support for the efficacy of those claimed compositions in protecting wheat and tobacco from parasite larvae after harvest, a rejection of the remaining claims 1–15, 17, 23–26 and 52 under 35 U.S.C. Section 112, first paragraph, is untenable and should not be made.

Applicant's Response To Rejection Under 35 U.S.C. Section 102(b)

The Examiner has rejected claims 5, 6 and 10 under 35 U.S.C. Section 102(b) as being anticipated by United States Patent No. 5,747,416 to McArdle (the "McArdle patent"). The McArdle patent is directed to the use of a protein-polysaccharide complex as a non-toxic and sustained release carrier for insecticides, herbicides, foliar nutrients and mixtures thereof. The McArdle patent also is directed to methods for using a solution, solid or flowable impregnated protein-polysaccharide complex as a delivery agent for the control of plant populations and insect populations and as a preservative for cut flowers. Applicant's claimed compositions are specific, not proteins or polysaccharides. Accordingly, as the critical ingredients in compositions disclosed in the McArdle patent are not ingredients set forth in Applicant's claims, and Applicant's claims are to compositions that consist essentially of the ingredients recited in the claims, a rejection of Applicant's claims 1–15, 17, 23–26 and 52 under 35 U.S.C. Section 102(b) or 35 U.S.C. Section 103(a) over the McArdle patent is untenable and should not be made.

Applicant's Response to Rejection Under 35 U.S.C. Section 103(a)

The Examiner has rejected claims 1–26, 50 and 51 under 35 U.S.C. Section 103(a) as being unpatentable over Canadian Patent No. 2,012,288 to Beilfuss, et al. (the "Beilfuss et al. patent") and Japanese Patent Publication No. 04-316506 to Nakano Vinegar Co. Ltd. (the "Nakano Patent Publication"), in view of Published International Application No. WO 98/54971 to Bessette ("the Bessette application").

In support of these rejections, the Examiner characterizes these references as follows:

> Regular use in horticulture to prevent microbial infestations; thus, inclusive of the instant after harvest application (p. 1) are known to include alcohols, phenols, here, essential oils and phenol GRAS compounds are used (Thymol p. 4, lines 16–20) and benzylalcohol, and phenylethyl alcohol (lines 21–25, p. 4), with acid (p. 5 top). Nothing is said about propylene glycol, specifically. Nakano, however, provides multi component plant extracts of plants containing benzyl alcohol, with [tannins], tannic acid and propylene glycol and acids-sothic, acetic see abstracts.
>
> The compositions are applied to plants, protecting against antimicrobials.
>
> Bessette also applies Benzyl alcohol to plants, among other GRAS compounds, and protects against insects. All compounds are GRAS or less toxic than standard chemical pesticides/antimicrobials, thus environmentally preferred.

(Page 5, lines 13–23).

The Beilfuss et al. patent is directed to a mixture for use as a plant hygiene disinfectant. As disclosed in the Abstract, the mixture consists of:

A) a naturally occurring phenol compound selected from the group thymol, guaiacol, eugenol, carvacrol, salicylic acid or its salts, methyl salicylate, p-cumaric acid, caffeic acid, ferulic acid, sinapic acid, sinapic alcohol or mixtures thereof in an amount from 1 to 80% by weight, and

B) an aromatic alcohol selected from the group phenoxyethanol, phenethyl alcohol, benzyl alcohol, 2-phenoxypropan-1-ol, 1-phenoxypropan-2-ol, 3-phenoxy-propan-1-ol, cinnamic alcohol, 2-phenylcyclohexanol or mixtures thereof in an amount from 20 to 99% by weight, in conjunction with

C) wetting agents, surfactants and customary additives in an amount of up to 15% by weight.

The Beilfuss et al. patent does not otherwise disclose a mixture containing any of benzyl alcohol, tannin, propylene glycol or lactic acid. Accordingly, the Beilfuss et al. disclosure has little relevance to Applicant's claimed compositions, which consist essentially of compounds that include at least one of benzyl alcohol, tannin, propylene glycol or lactic acid.

The Nakano Patent Publication is directed to a plant pest-controlling agent comprising:

> an acetic acid-containing material and one kind or more of substances selected from a group consisting of (A) the squeezed solution of one kind or more of edible plants selected from Plantago asiatica L., Hosta, Magnolia, Aspidistra elatior Blume, Scuttellariae Radix etc., the water and/or organic solvent extraction solution of the edible plants or the squeezed solution, or a condensed product thereof, (B) one kind or more of natural additives selected from persimmon tannin, calcium oxide, saponin, smoking liquid, naringin, etc., and (C) one kind or more of food additives selected from lecithin, lactic acid iron salt, tartaric acid, nicotinic amide, alginic amide, etc.

In contrast, Applicant's claimed compositions do not include any of the substances selected from the Group A listing of plants. As the Group A plants are an essential ingredient of the plant pest-controlling agent disclosed in the Nakano Patent Publication, the Nakano Patent Publication does not disclose or suggest Applicant's claimed compositions. Moreover, one skilled in the art cannot combine the Nakano Patent Publication with the Beilfuss et al. patent because, as noted above, the compositions disclosed in the Beilfuss et al. patent are different from Applicant's claimed compositions.

The Bessette et al. published International Application is directed to a pesticide and a method of using the pesticide to kill invertebrates, especially insects, arachnids and larvae. The Bessette method includes preparing a mixture of a carrier with an affector agent, which interferes with the neurotransmitters of the octopamine receptor sites in the insects, arachnids and larvae, and applying the mixture to insects, arachnids, larvae and their habitat. In the examples section, the preferred blend of affector agent is alpha-terpineol, eugenol and cinnamic alcohol. The carrier is acetone. The Bessette et al. published International Application does not disclose Applicant's claimed antimicrobial composition and cannot be combined with the Nakano Japanese Patent Publication and the Beilfuss et al. patent to obtain Applicant's claimed compositions for use in preserving wheat or tobacco post harvest. Accordingly, a rejection of Applicant's claims 1–15, 17, 23–26 and 52 under 35 U.S.C. Section 103(a) over the Beilfuss et al. patent, the Nakano Japanese Patent Publication and the Bessette et al. Published International Application would be untenable and should not be made.

IV CONCLUSION

It is believed that the above constitutes a complete response under 37 C.F.R. Section 1.111 and that all bases of rejection stated in the Official Action have been adequately rebutted and/or overcome. Accordingly, a Notice of Allowance of United States Patent Application Serial No. 10/069,476 is requested as the next Office Action. The Examiner is requested to telephone the undersigned attorney if any matters that can reasonably be expected to be resolved in a telephone interview are believed to impede the allowance of the pending claims.

Respectfully submitted,

DANN DORFMAN HERRELL AND SKILLMAN

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THE MERCK INDEX

AN ENCYCLOPEDIA OF
CHEMICALS AND DRUGS

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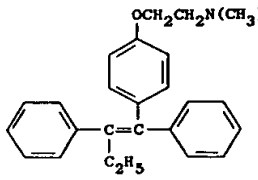
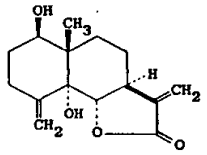
EXHIBIT A - 1

ration of isomers: Bedford, Richardson, *Nature* **212**, 733 (1966); Harper *et al.*, Brit. pat. **1,064,629**; Fr. Addn. pat. **90,418** (both 1967 to I.C.I.). Comparative activity of isomers: Harper, Walpole, *Nature* **212**, 87 (1966). Pharmacology: *eidem, J. Endocrinol.* **37**, 83 (1967); *J. Reprod. Fert.* **13**, 101 (1967); Terenius, *Acta Endocrinol. (Copenhagen)* **64**, 47 (1970).



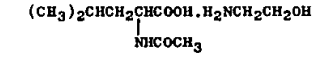
Crystals from petr ether, mp 96-98°.
Citrate, $C_{32}H_{37}NO_{10}$, *ICI-46474, Nolvadex.* mp 140-142°.
cis-Form base, mp 72-74° from methanol.
cis-Form citrate, $C_{32}H_{37}NO_{10}$, *ICI-47699.* mp 126-128°.
THERAP CAT: Anti-estrogen.

8824. Tanacetin. *Decahydro-6β,9aα-dihydroxy-5aβ-methyl-3,9-bis(methylene)naphtho[1,2-b]furan-2(3H)-one;* 1β,5α-dihydroxy-6β,7αH-selina-4(15),11(13)-dien-6,12-olide. $C_{15}H_{20}O_4$; mol wt 264.31. C 68.16%, H 7.63%, O 24.21%. Isoln from seed, herb, and flowers of *Tanacetum vulgare* L., *Compositae:* Homolle, *J. Pharm. Chim.* **7**, 57 (1845); Jaretzky, Kühne, *Arch. Pharm.* **271**, 353 (1933); Suchy, *Coll. Czech. Chem. Commun.* **27**, 1058 (1962). Structure and absolute config: Samek *et al., ibid.* **38**, 1971 (1973).



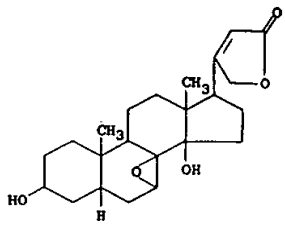
Crystals, mp 205°. $[\alpha]_D^{22}$ +179.5° (c = 2.3 in ethanol).

8825. Tanganil. *N-Acetylleucine compound with 2-aminoethanol;* monoethanolamine DL-acetylleucinate; DL-acetylleucine monoethanolamine salt; monoethanolamine salt of α-acetamidoisocaproic acid; RP 7452. $C_{10}H_{22}N_2O_4$; mol wt 234.29. C 51.26%, H 9.46%, N 11.96%, O 27.32%. Prepn: Gailliot *et al.*, U.S. pat. **2,941,924** (1960 to Rhône-Poulenc).



Crystals, mp about 150°. Soly in water: >20%; slight soly in alcohol: ~1%. pH of 10% aq soln: about 6.
THERAP CAT: Antivertigo agent.

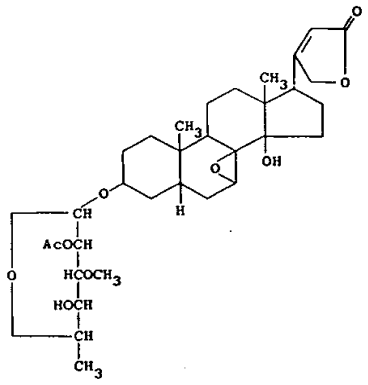
8826. Tanghinigenin. *7β,8-Epoxy-3β,14-dihydroxy-5β-card-20(22)-enolide.* $C_{23}H_{32}O_5$; mol wt 388.49. C 71.10%, H 8.30%, O 20.59%. Isoln from glucosides: Sigg *et al., Helv. Chim. Acta* **38**, 166 (1955). Structure: Flury, Reichstein, *Ann. Chim. (Rome)* **53**, 23 (1963); Flury *et al., Helv. Chim. Acta* **48**, 1113 (1965).



Prisms from acetone + petr ether, mp 187-188°. $[\alpha]_D^{23}$ +14.1° (c = 1.138 in chloroform). uv max: 217 nm (log ε 4.22). LD_{50} in cats: 1 mg/kg i.v., Chen, Henderson, *J. Pharmacol. Exp. Ther.* **111**, 365 (1954).

Acetate, $C_{25}H_{34}O_6$, *acetyltanghinigenin.* Prisms from acetone + petr ether, mp 241-243°. $[\alpha]_D^{24}$ +14.9° (c = 1.075 in chloroform).

8827. Tanghinin. *3β-[(2-O-Acetyl-6-deoxy-3-O-methyl-α-L-glucopyranosyl)oxy]-7β,8-epoxy-14-hydroxy-5β-card-20(22)-enolide.* $C_{32}H_{46}O_{10}$; mol wt 590.69. C 65.06%, H 7.85%, O 27.09%. From the seed of *Tanghinia madagascariensis* Pet., *Apocynaceae* and *Tanghinia venenifera* Poir., *Apocynaceae.* Isoln: Arnaud, *Compt. Rend.* **108**, 1255 (1889); Frèrejacque *et al., ibid.* **226**, 268 (1948). Tentative structure: Sigg *et al., Helv. Chim. Acta* **38**, 166 (1955). Revised structure: Flury, Reichstein, *Ann. Chim. (Rome)* **53**, 23 (1963).



Leaflets from methanol + ether, mp 128-131°. $[\alpha]_D^{23}$ −81.5° (c = 1.092 in methanol). uv spectra: Frèrejacque *et al., Helv. Chim. Acta* **39**, 1900 (1956). LD_{50} in cats: 0.4 mg/kg i.v., Chen, Henderson, *J. Pharmacol. Exp. Ther.* **111**, 365 (1954).

8828. Tannic Acid. Tannin; gallotannin; gallotannic acid. Incorrectly "*digallic acid*". Tannic acid of commerce usually contains about 10% H_2O. Occurs in the bark and fruit of many plants, notably in the bark of the oak species, in sumac and myrobalan. It is produced from Turkish or Chinese nutgall, the former contg 50-60%, the latter about 70%. The chemistry of the tannins is most complex and non-uniform. Tannins may be divided into 2 groups: *(a)* derivatives of flavanols, so-called condensed tannins and *(b)* hydrolyzable tannins (the more important group) which are esters of a sugar, usually glucose, with one or more trihydroxybenzenecarboxylic acids. The structure given here is that of a tannin named *corilagin:* Schmidt *et al., Ann.* **587**, 67 (1954). The empirical formula of corilagin is $C_{27}H_{24}O_{18}$. For the commercial tannic acid, whose specifications follow, the empirical formula is usually given as $C_{76}H_{52}O_{46}$. *Comprehensive reviews:* M. Nierenstein, *The Natural Organic Tan-*

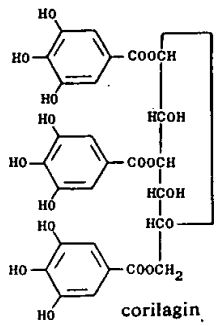


EXHIBIT A - 2

ains (London, 1934); O. Th. Schmidt, "Gallotannine" in *Fortschr. Chem. Org. Naturst.* 13, 70-136 (1956); *Symposium on the Chemistry of Vegetable Tannins* (Soc. Leather Trades Chemists, Croydon 1956).

Yellowish-white to light brown, amorphous, bulky powder or flakes, or spongy masses; faint characteristic odor; astringent taste. Gradually darkens on exposure to air and light; at 210-215° dec mostly into pyrogallol and CO_2. Gives insol ppts with albumin, starch, gelatin, most alkaloidal and metallic salts; produces a bluish-black color or precip with ferric salts. One gram dissolves in 0.35 ml water, 1 ml warm glycerol; very sol in alc, acetone; practically insol in benzene, chloroform, ether, petr ether, carbon disulfide, carbon tetrachloride. *Keep well closed and protected from light.* LD_{100} orally in mice: 6.0 g/kg, Robinson, Graessle, *J. Pharmacol. Exp. Ther.* 77, 63 (1943).

Incompat: Salts of heavy metals, alkaloids, gelatin, albumin, starch, oxidizing substances—e.g., permanganates, chlorates; spirit nitrous ether, lime water.

USE: Mordant in dyeing; manuf ink; sizing paper and silk; printing fabrics; with gelatin and albumin for manuf of imitation horn and tortoise shell; tanning; clarifying beer or wine; in photography; as coagulant in rubber manuf; manuf gallic acid and pyrogallol; as reagent in analytical chemistry.

THERAP CAT: Astringent.

THERAP CAT (VET): Astringent, hemostatic, in solutions for burns. Has been used internally as an astringent and as a heavy metal antidote.

8829. Tannoform. *Methyleneditannin;* tannin-formaldehyde; Helgotan. Prepd by condensing one mole formaldehyde with two moles tannin: Chemnitius, *Pharm. Zentralh.* 68, 273 (1927); Schwyzer, *Pharm. Ztg.* 74, 1334 (1929).

Reddish, odorless, tasteless, bulky powder, mp about 230° with decompn. Practically insol in water; sol in alcohol, alkaline fluids.

THERAP CAT: Astringent.

THERAP CAT (VET): Externally as astringent, antiseptic (skin lesions and otorrhea). Has been used internally for diarrhea.

8830. Tanphetamin. *d*-Amphetamine tannate; Synatan. A 17.5 mg dose is equivalent to 4.98 mg of *d*-amphetamine base. Prepd by the reaction of *d*-amphetamine (free base) with tannic acid in isopropanol: Cavallito, U.S. pat. 2,950,-309 (1960 to Irwin, Neisler and Co.).

Caution: Excessive use may lead to tolerance and physical dependence.

THERAP CAT: Adrenergic.

8831. Tantalum. Ta; at. wt 180.9479; at. no. 73; valence 5, also 4, 3, 2. Two naturally occurring isotopes: 181 (99.9877%); 180 (0.0123%; $T_{1/2} > 10^{12}$ years); artificial radioactive isotopes: 172-179; 182-186. Occurs almost invariably with niobium; less abundant than niobium. Found in the minerals columbite (*q.v.*), *tantalite* [$(Fe,Mn)(Ta,Nb)_2O_6$] and *microlite* [$(Na,Ca)_2Ta_2O_6(O,OH,F)$]. Discovered by Ekeberg in 1802; first obtained pure by Bolton: *Z. Elektrochem.* 11, 45 (1905). Prepn: Schoeller, Powell, *J. Chem. Soc.* 119, 1927 (1921). Reviews of tantalum and its compounds: G. L. Miller, *Tantalum and Niobium* (Academic Press, New York, 1959) 767 pp; Brown, "The Chemistry of Niobium and Tantalum" in *Comprehensive Inorganic Chemistry* vol. 3, J. C. Bailar, Jr. *et al.*, Eds. (Pergamon Press, Oxford, 1973) pp 553-622.

Gray, very hard, malleable, ductile metal; can readily be drawn in fine wires. mp 2996°. bp 5429°. d 16.69. Spec heat (0°): 0.036 cal/g/°C. Electrical resistivity (18°): 12.4 ohm-cm. Insol in water. Very resistant to chemical attack; not attacked by acids other than hydrofluoric; not attacked by aq alkalies; slowly attacked by fused alkalies. Reacts with fluorine, chlorine, and oxygen only on heating. At high temps absorbs several hundred times its volume of hydrogen; combines with nitrogen, with carbon.

USE: In pen points; analytical weights; apparatus and instruments for chemical, surgical, and dental use instead of platinum, in tantalum capacitors (a type of electrolytic condenser, trademarked "Tantalytic").

THERAP CAT: Surgical aid.

8832. Tantalum Pentachloride. Cl_5Ta; mol wt 358.24. Cl 49.50%, Ta 50.50%. $TaCl_5$. Prepn: Rolsten, *J. Am. Chem. Soc.* 80, 2952 (1958). Review of tantalum halides: Fairbrother in *Halogen Chemistry* vol. 3, V. Gutmann, Ed. (Academic Press, New York, 1967) pp 123-178.

White or light yellow, cryst powder; monoclinic; dec in moist air. d 3.68; mp 216.5-220°. Begins to volatilize at 144°, bp 239.3°. Dec by water; sol in abs alcohol. LD_{50} orally in rats: 1.9 g/kg.

8833. Tantalum Pentafluoride. F_5Ta; mol wt 275.95. F 34.43%, Ta 65.57%. TaF_5. Prepd from tantalum pentachloride by the halide exchange method according to the equation $TaCl_5 + 5HF \rightarrow TaF_5 + 5HCl$: Ruff, Zedner, *Ber.* 42, 492 (1909); Ruff, Schiller, *Z. Anorg. Allgem. Chem.* 72, 329 (1911); Kwasnik in *Handbook of Preparative Inorganic Chemistry* vol. 1, G. Brauer, Ed. (Academic Press, New York, 2nd ed, 1963) pp 255-256. Prepn from the elements: Fairbrother, Frith, *J. Chem. Soc.* 1951, 3051. Review of transition metal pentafluorides: Peacock, *Advan. Fluoride Chem.* 7, 113-145 (1973).

Deliquescent, strongly refractive prisms. d^{20} 4.74. mp 96.8°. Also reported as 95.1°: Fairbrother, Frith, *loc. cit.* bp 229.5°. Sol in water and ether with formation of oxyfluoro complexes. Also sol in concd nitric acid, more sol in fuming nitric acid. Sparingly sol in hot carbon disulfide and hot carbon tetrachloride. Etches glass slowly.

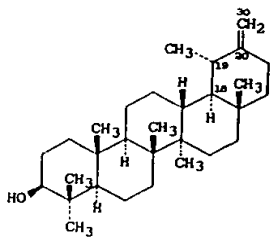
USE: Friedel-Crafts catalyst.

8834. Tantalum Pentoxide. Tantalic acid anhydride. O_5Ta_2; mol wt 441.90. O 18.10%, Ta 81.89%. Ta_2O_5. White, microcryst, infusible powder. Insol in water, alcohol, mineral acids; sol in HF; dec by fusing with $KHSO_4$ or KOH, forming potassium tantalate with the latter. LD_{50} orally in rats: > 8.0 g/kg.

8835. Tar Acids. Tar acids are the phenols obtained from coal tar distillates or synthesized from coal tar hydrocarbons. Examples: Phenol, cresol, cresylic acid, xylenol.

8836. Taraxacum. Dandelion; lion's tooth. Dried rhizome and roots of *Taraxacum palustre* (Lyons) Lam. & DC. (*T. officinale* Weber, *Leontodon taraxacum* L.), *Compositae. Habit.* Europe; naturalized in North America. *Constit.* Taraxerol, choline, levulin, inulin, pectin.

8837. Taraxasterol. *18α,19α-Urs-20(30)-en-3β-ol;* taraxast-20(30)-en-3β-ol; anthesterin; α-lactucerol; taraxasterin. $C_{30}H_{50}O$; mol wt 426.70. C 84.44%, H 11.81%, O 3.75%. A monohydroxy triterpene. Isoln from *Taraxacum officinale,* Wiggers, *Compositae:* Power, Browning, *J. Chem. Soc.* 101, 2411 (1912). Structure and configuration: Ames *et al., ibid.* 1954, 1905. Identity with anthesterin: Power, Browning *ibid.* 105, 1829 (1914); with α-lactucerol: Zellner, *Monatsh.* 47, 681 (1926).



Needles from alcohol, mp 221-222°. $[\alpha]_D$ +96.3° ($CHCl_3$). Very sol in alcohol, ether, petr ether; slightly sol in chloroform, benzene, carbon disulfide, acetone.

Acetate, $C_{32}H_{52}O_2$, *lactucerin, lactucon.* Hexagonal plates. mp 251-252° (from ethyl acetate + alcohol). $[\alpha]_D$ +100.5°.

8838. Taraxein. A protein complex isolated from the blood serum of schizophrenics by chromatography on diethylaminoethyl cellulose. The taraxein fraction precedes the ceruloplasmin fraction. Contains copper bound to protein. Method of isolation: Heath *et al., Am. J. Psychiat.* 114, 14 (1957); *(Lippincott's) Medical Science* 6, 401 (1959). Processing and identification: Heath *et al., Proc. 3rd World Congr. Psychiat., Montreal, 1961* 1, 619 (1962). Studies of